

**Results:** In the 6 months since the first training the nurses have assessed 1,432 out of 2,180 or 66% of the cohort, including 70% of children in quintile 5. Referrals average 31% and have been of high quality with 75% accepted, 16% already known, and only 9% declined at triage.

**Discussion:** The intersectoral Clinical Advisory Group is critical to the success of the programme, as it has achieved engagement and commitment from all stakeholders to the clinical processes and referral pathways. Training nurses with existing relationships with families and strong community networks has led to high rates of children seen from the most deprived quintile. The training and the referral pathway, via the Clinical Nurse Leader to an intersectoral triage group has led to high quality referrals and a low rate of referrals declined.

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### Substance Use and Its Influence on Long-Term Hepatitis B Immunity in Adolescence

N Wood<sup>1</sup>, P McIntyre<sup>1</sup>, G Singh<sup>2</sup>, S Sayers<sup>2</sup>

<sup>1</sup>The Children's Hospital at Westmead <sup>2</sup>Menzies School of Health Research, Darwin, Northern Territory, Australia

**Introduction:** Response to hepatitis B (HBV) vaccination is reduced by cigarette smoking and alcohol. A cohort of young Aboriginal adults some of whom were the first to receive HBV vaccine in Australia have been followed since birth. The influence of substance use (alcohol, cigarettes, marijuana) on prevalence of hepatitis B virus (HBV) infection and response to a booster dose of the HBV vaccine in this cohort is described for the first time.

**Study design:** Four hundred and thirty seven young Aboriginal adults between 16–20 years of age in the Northern Territory who participated in wave 3 of the Aboriginal Birth Cohort study had hepatitis B serology (hepatitis B surface antigen, hepatitis B surface (antiHBs) and core antibody (antiHBc)) measured. Baseline HBV serology and response to HBV booster vaccine were correlated with self reported history of substance use, including cigarettes, alcohol and marijuana.

**Results:** Current use of alcohol (40%), cigarettes (60%) and marijuana (31%) was reported by participants. One fifth had evidence of past HBV infection and there was no significant difference between those reporting current use with never/no use. HBV carriers were non significantly more likely to be current substance users than non users ( $P = 0.17$ ). There was no significant difference in HBV booster vaccine response between current use and non use of cigarettes and alcohol. Current users of marijuana were significantly less likely to respond to HBV booster vaccination than non users (RR = 0.38, 95%CI 0.15–0.97,  $P < 0.02$ ).

**Conclusions:** Substance use can reduce both primary and booster immune responses to HBV vaccine. Its use has implications for the longevity of immunity and need for additional booster doses. This study suggests that marijuana use affects immune memory responses to HBV and needs further exploration.

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### Long Term Immunity of Birth and One Month Old Acellular Pertussis (PA) Vaccine

N Wood<sup>1</sup>, P McIntyre<sup>1</sup>, H Marshall<sup>2</sup>

<sup>1</sup>The Children's Hospital At Westmead <sup>2</sup>Women's and Children's Hospital, Adelaide, Australia

**Background:** We have previously shown that monovalent acellular pertussis (Pa) vaccine at birth and one month significantly increases antibody responses to pertussis vaccine antigens pertussis toxoid (PT), filamentous hemagglutinin (FHA) and pertactin (PRN). This study measured vaccine-specific immune responses at 2 years of age to look for antigen interference and immune persistence.

**Methods:** Newborns were randomised to receive Pa vaccine and hepatitis B (HBV) vaccine at birth and Pa at one month or Pa and HBV at birth only or HBV vaccine at birth only. All received routine DTPa-HBV-IPV-Hib and pneumococcal vaccines at 2, 4 and 6 months of age. Antibody (Ab) and cell mediated (CMI) responses to PT, FHA and PRN, diphtheria (D), tetanus (T) and hepatitis B (HepB) were measured at 2 years of age

**Results:** Fifty two of 74 subjects (70%) were followed up. Ab to pertussis antigens, diphtheria and tetanus at 2 years were equivalent in all groups. Overall 79% had antibody to PT below detectable levels. Hepatitis B antibody was non-significantly lower in those who had received both HBV and Pa, compared to controls. Th2 polarisation, previously seen in CMI responses to pertussis antigens at 8 months of age, was no longer evident. **Conclusion:** These data suggest that early receipt of Pa does not reduce pertussis immunity at 2 years, but hepatitis B immune responses may be reduced, consistent with antigen interference. Th2 polarisation did not persist, which is important because this is associated with large injection site reactions to DTPa boosters. Evaluation of immune responses pre and post DTPa vaccine at 3.5 to 4 years will be important.

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### Iron Supplementation for Breath-holding Attacks in Children: A Cochrane Systematic Review

A Zehetner<sup>1</sup>, N Orr<sup>2</sup>, A Buckmaster<sup>3</sup>, K Williams<sup>4</sup>, D Wheeler<sup>5</sup>

<sup>1</sup>The Children's Hospital at Westmead, Sydney, Australia <sup>2</sup>Palmerston North Hospital, Palmerston North, New Zealand <sup>3</sup>Gosford Hospital, Gosford, Australia <sup>4</sup>School of Women's and Children's Health, University of New South Wales & Sydney Children's Hospital, Sydney, Australia <sup>5</sup>Cochrane Child Health Field, Community Child Health, Sydney Children's Hospital, Sydney, Australia

**Introduction:** Breath-holding attacks are a common debilitating neuro-behavioural condition of childhood provoking parental-stress and presentation to health care facilities. Low cost and generally well-tolerated, iron supplementation has been claimed to reduce the frequency and/or severity of breath-holding attacks in children. To assess the effect of iron supplementation on the frequency and severity of breath-holding attacks in children, we conducted a Cochrane Systematic Review for randomised and quasi-randomised controlled trials comparing iron supplementation versus placebo or no therapy in children <18 years with recurrent (>3) breath-holding episodes.

**Method:** We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, PsycINFO, CINAHL and the metaRegister of Controlled Trials up to April 2009 and analysed reference lists. Pharmaceutical companies manufacturing oral iron supplements and some trial authors were contacted for unpublished data and trials. The primary outcome was reduction in the frequency (number over time) and/or severity (cessation of loss of consciousness and/or convulsive movements) of breath-holding attacks. Risk of bias was assessed using domain-based evaluation.

**Results:** Two trials (87 children) fulfilled the inclusion criteria. Both trials reported substantial clinical reduction of breath-holding episodes in the iron-treated groups, which were statistically significant. Overall 39/43 (91%) had complete or partial remission in the iron-treated group vs 6/44 (14%) in the control group (OR 76.48; 95% CI 15.65–373.72).

**Conclusion:** Iron supplementation (5 mmol/kg/day of elemental iron for 16 weeks) appears to be useful in reducing the frequency and severity of breath-holding attacks. This is of particular benefit in children with iron deficiency anaemia, with response predictive and correlating with improvement in haemoglobin values. Iron may still be of assistance in children who are not anaemic or have low normal haemoglobin levels. Further high-quality randomised control trials of iron supplementation to treat breath-holding attacks in children are required.